AN EFFICIENT OPTICAL COHERENCE TOMOGRAPHY (OCT) SYSTEM AND METHOD FOR RAPID IMAGING IN THREE DIMENSIONS

ABSTRACT OF THE DISCLOSURE

5   An optical coherence tomography (OCT) system including a polarizing splitter disposed to direct light in an interferometer such that the OCT detector operates in a noise-optimized regime. When scanning an eye, the system detector simultaneously produces a low-frequency component representing a scanning laser ophthalmoscope-like (SLO-like) image pixel and a high frequency component representing a two-dimensional (2D) OCT *en face* image pixel of each point. The SLO-

10   like image is unchanging with depth, so that the pixels in each SLO-like image may be quickly realigned with the previous SLO-like image by consulting prominent image features (*e.g.*, vessels) should lateral eye motion shift an OCT *en face* image during recording. Because of the pixel-to-pixel correspondence between the simultaneous OCT and SLO-like images, the OCT image pixels may be remapped on the fly according to the corresponding SLO-like image pixel remapping to create an

15   undistorted 3D image data set for the scanned region.